Fig. 1

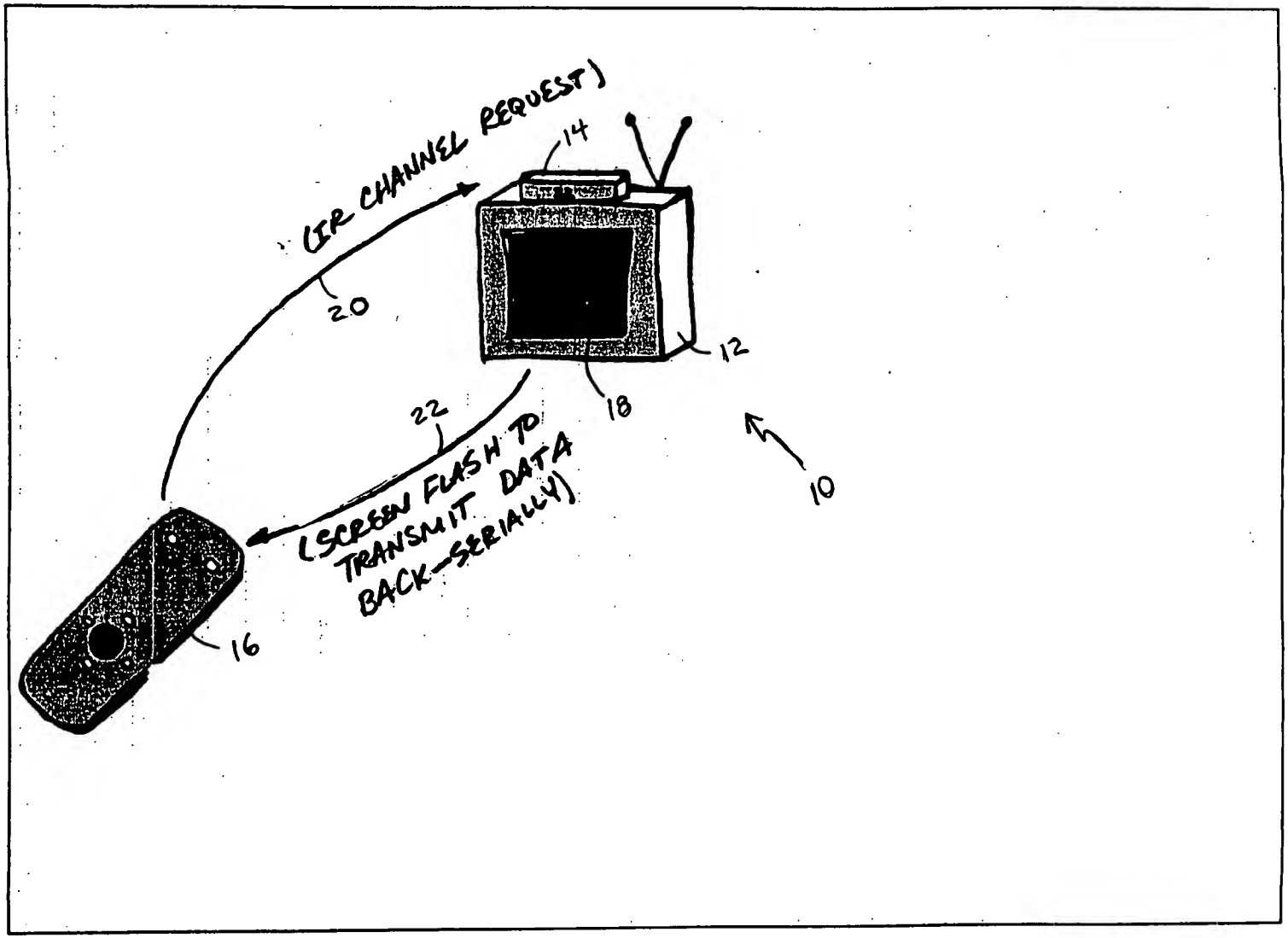

(IR CHANNEL REQUEST)
14
20
12
22
18
(SCREEN FLASH TO TRANSMIT DATA BACK-SERIALLY)
10
16

Fig. 2

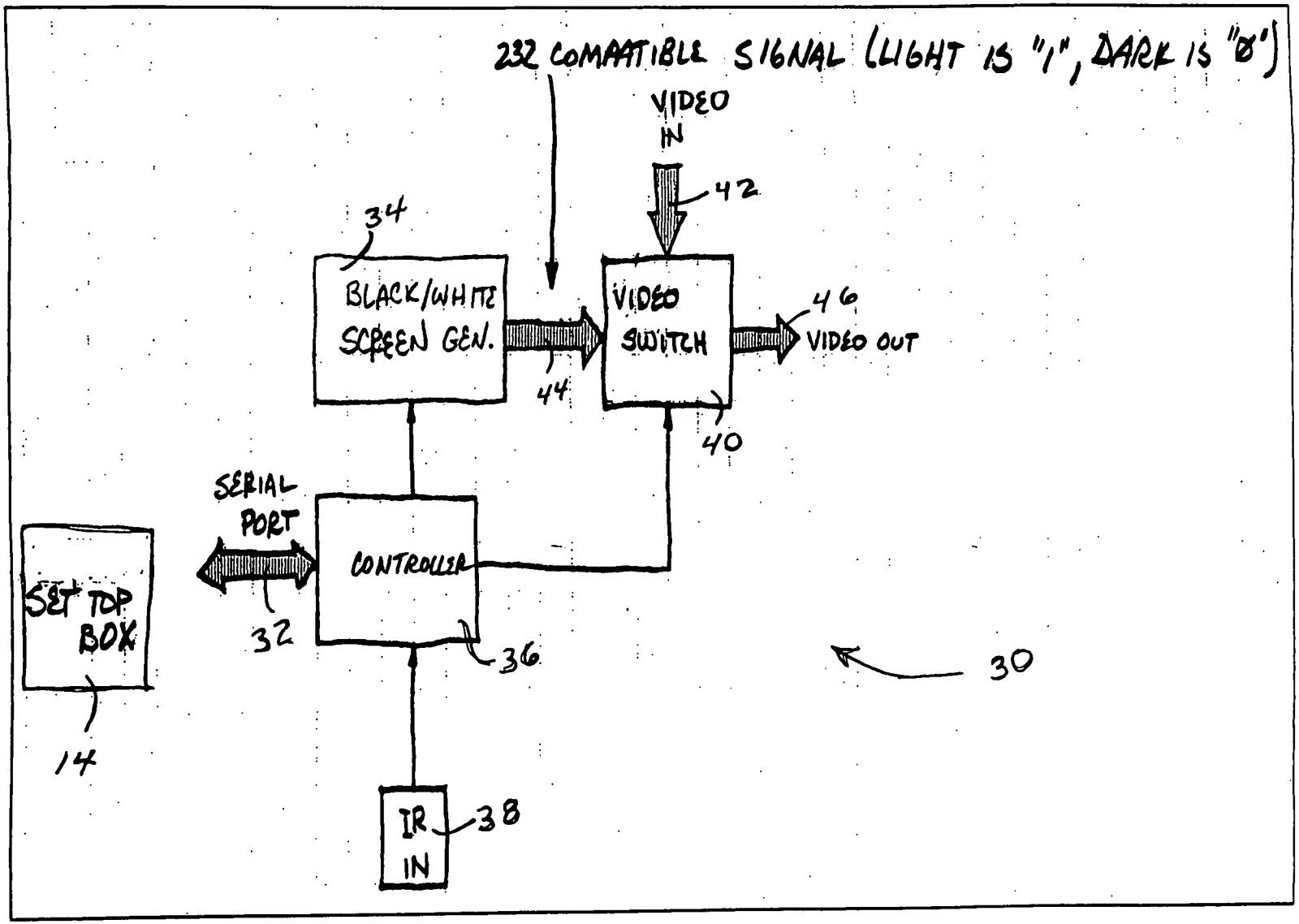

232 COMPATIBLE SIGNAL (LIGHT IS "1", DARK IS "0")
VIDEO IN
42
34
BLACK/WHITE SCREEN GEN.
VIDEO SWITCH
46
VIDEO OUT
44
40
SERIAL PORT
CONTROLLER
SET TOP BOX
32
36
30
14
IR IN
38

Fig. 3

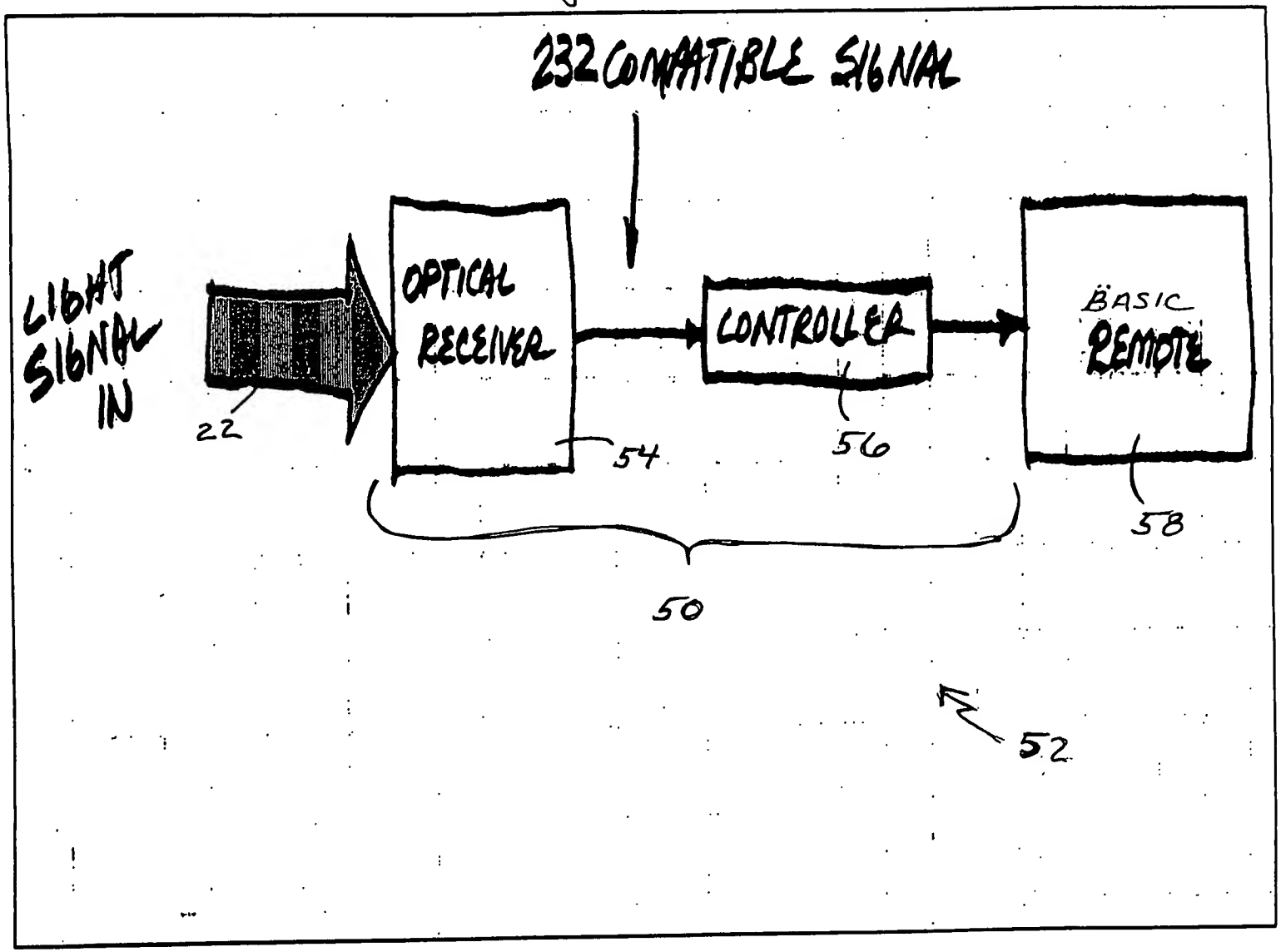
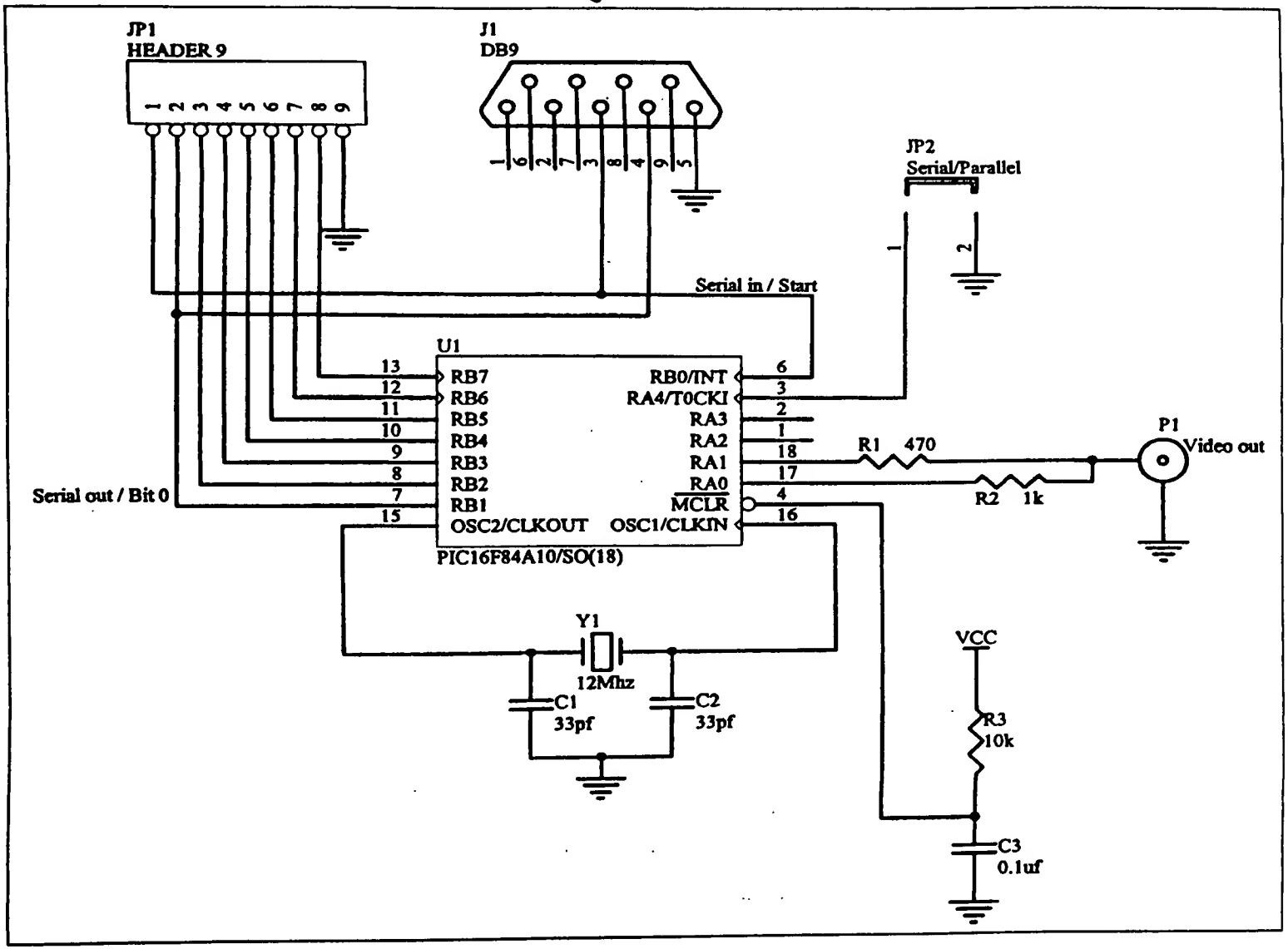

232 COMPATIBLE SIGNAL
LIGHT SIGNAL IN
22
OPTICAL RECEIVER
54
CONTROLLER
56
BASIC REMOTE
58
50
52

Fig. 4


JP1
HEADER 9
1 2 3 4 5 6 7 8 9
J1
DB9
1 6 2 7 3 8 4 9 5
JP2
Serial/Parallel
1
2
Serial in / Start
U1
13 RB7
12 RB6
11 RB5
10 RB4
9 RB3
8 RB2
7 RB1
15 OSC2/CLKOUT
RB0/INT 6
RA4/T0CKI 3
RA3 2
RA2 1
RA1 18
RA0 17
MCLR 4
OSC1/CLKIN 16
PIC16F84A10/SO(18)
Serial out / Bit 0
R1 470
R2 1k
P1
Video out
Y1
12Mhz
C1
33pf
C2
33pf
VCC
R3
10k
C3
0.1uf

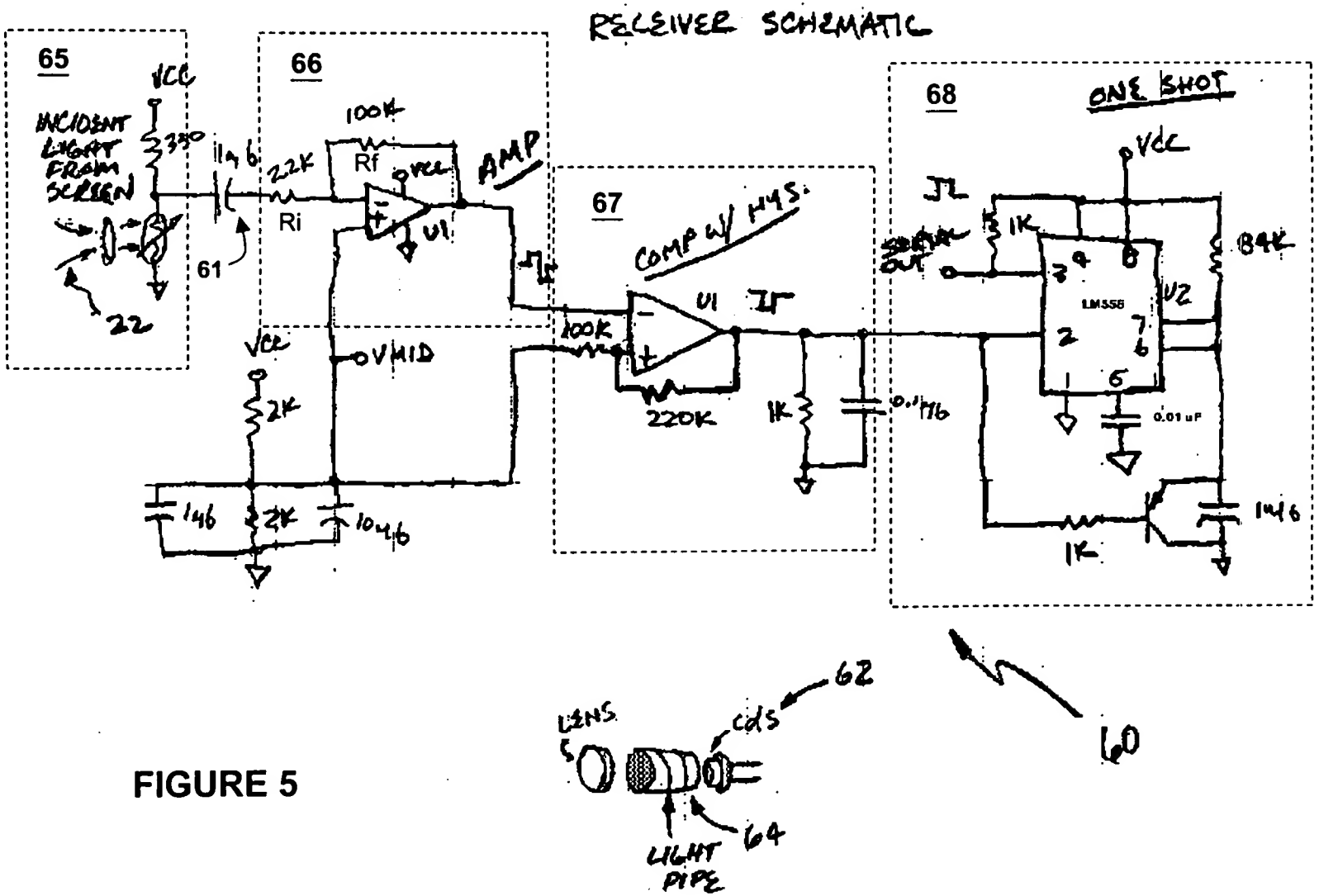

RECEIVER SCHEMATIC
65
66
67
68
ONE SHOT
AMP
COMP W/ HYS.
INCIDENT LIGHT FROM SCREEN
VCC
330
22K
100K
Rf
Ri
U1
61
22
VMID
2K
1µ6
10µ6
220K
1K
0.1µ6
84K
LM555
U2
0.01 uF
LENS
CDS
62
64
LIGHT PIPE
60

FIGURE 5

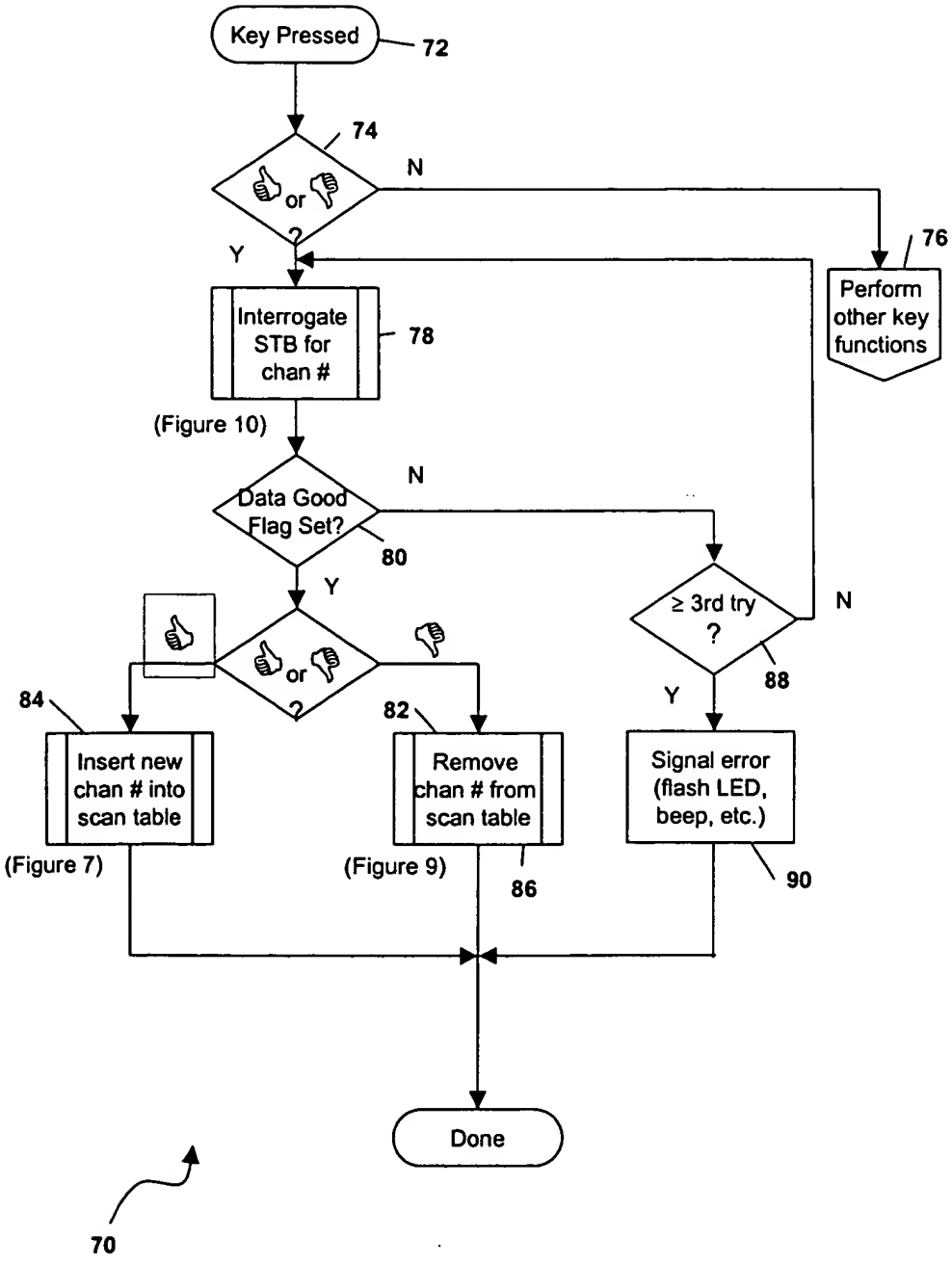

Key Pressed
72
74
or
?
N
76
Perform other key functions
Y
Interrogate STB for chan #
78
(Figure 10)
Data Good Flag Set?
N
80
Y
≥ 3rd try ?
N
88
Y
or
?
84
82
Insert new chan # into scan table
(Figure 7)
Remove chan # from scan table
(Figure 9)
86
Signal error (flash LED, beep, etc.)
90
Done
70

FIGURE 6

20040702.0930

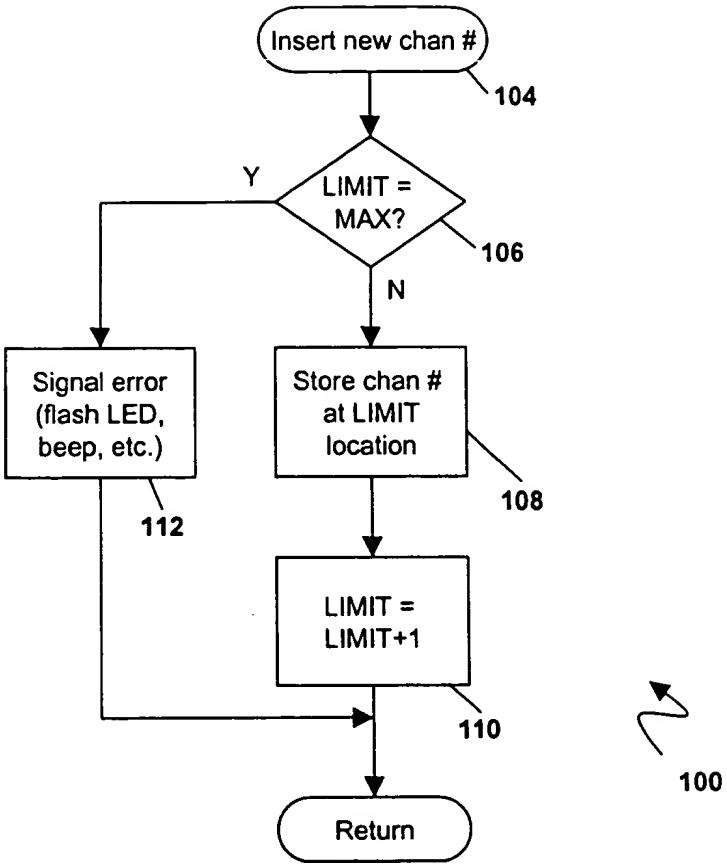


FIGURE 7

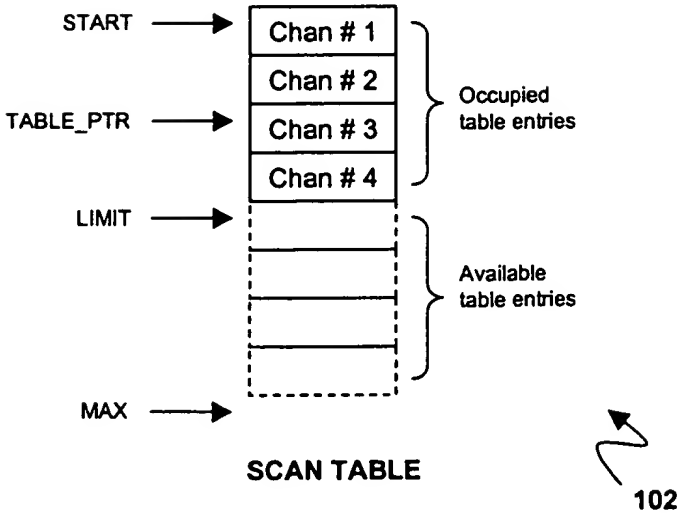


FIGURE 8

09605,01240

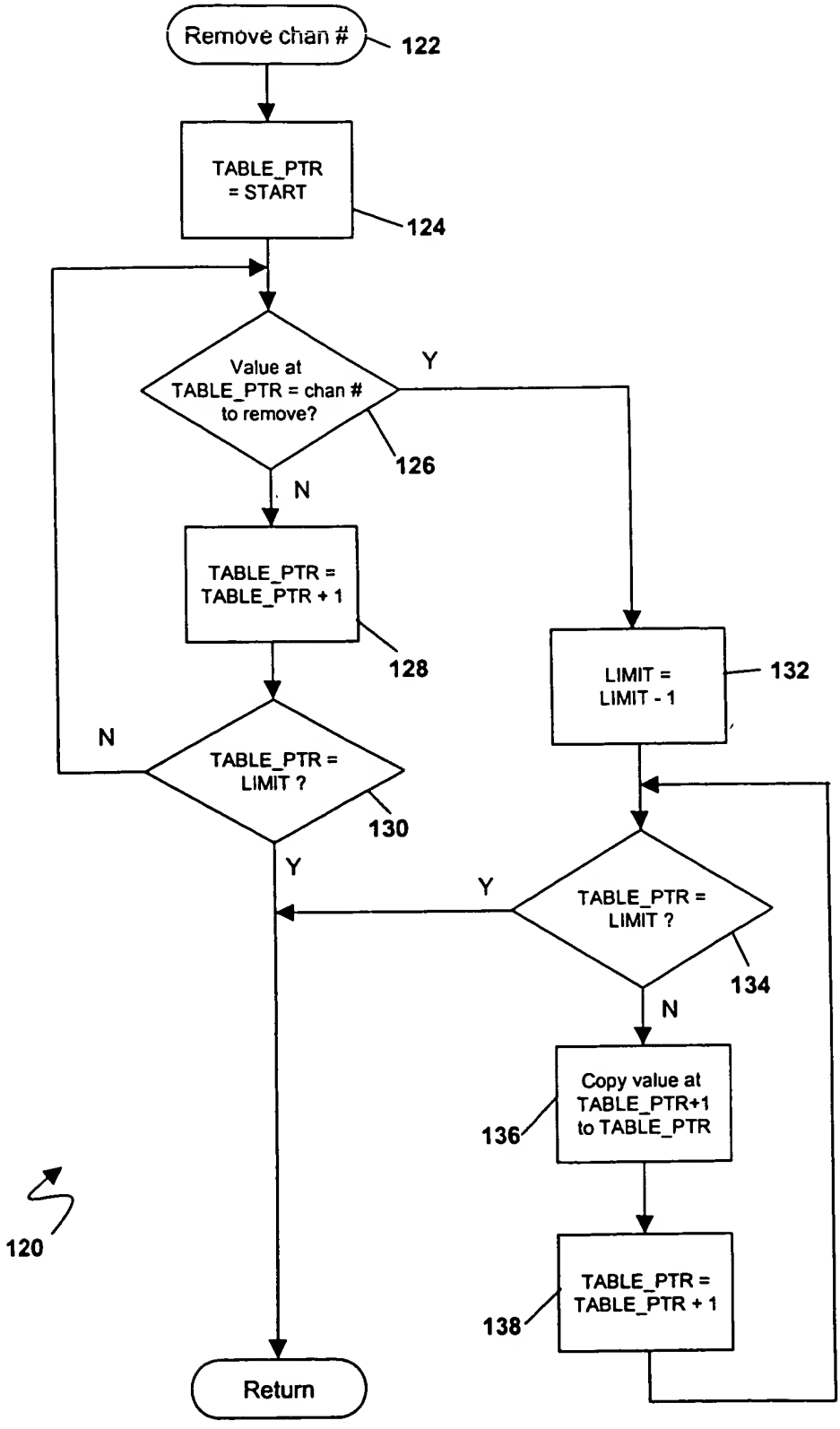


FIGURE 9

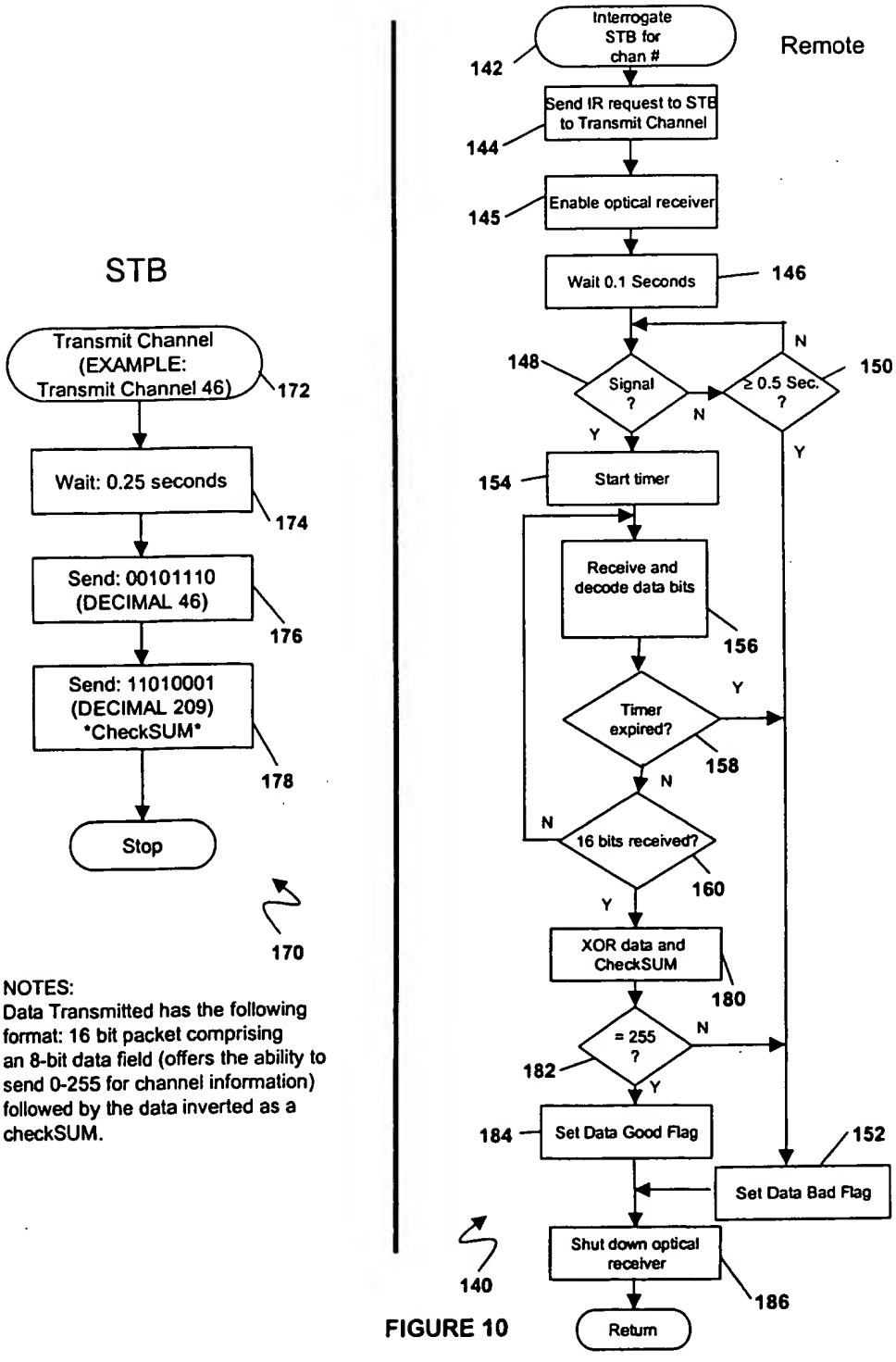

Remote
Interrogate STB for chan #
142
Send IR request to STB to Transmit Channel
144
Enable optical receiver
145
Wait 0.1 Seconds
146
148
Signal ?
N
≥ 0.5 Sec. ?
150
Y
Y
154
Start timer
Receive and decode data bits
156
Timer expired?
158
Y
N
N
16 bits received?
160
Y
XOR data and CheckSUM
180
= 255 ?
182
N
Y
184
Set Data Good Flag
152
Set Data Bad Flag
Shut down optical receiver
186
140
Return
STB
Transmit Channel (EXAMPLE: Transmit Channel 46)
172
Wait: 0.25 seconds
174
Send: 00101110 (DECIMAL 46)
176
Send: 11010001 (DECIMAL 209) *CheckSUM*
178
Stop
170
NOTES:
Data Transmitted has the following format: 16 bit packet comprising an 8-bit data field (offers the ability to send 0-255 for channel information) followed by the data inverted as a checkSUM.

FIGURE 10